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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/505,580	02/16/2000	Peter Reimer	2981.P1/Ecore/core/mbc	5947

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APPLIED MATERIALS, INC.
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SANTA CLARA, CA 95050

EXAMINER

BUEKER, RICHARD R

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 03/31/2003

11

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/505,580

Applicant(s)

REIMER ET AL.

Examiner

Richard Bueker

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 July 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) 1-8,21-24,28,30-38,40 and 41 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9-13,15,16,18-20,25-27,29 and 39 is/are rejected.
- 7) ☒ Claim(s) 14 and 17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2, 5 and 6
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

Claims 1-8, 21-24, 28, 30-38 and 40-41 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 7.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claim 25 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Ozawa (5,474,410). Ozawa discloses an apparatus for processing a substrate comprising a transfer chamber and a plurality of process chambers connected to the transfer chamber. The pumps for evacuating the process chambers are arranged in a manner that inherently meets the presently recited alternating relationship adjacent to the transfer chamber and within a perimeter of the apparatus.

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Claim 25 is rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Rick (6,206,975). Rick discloses an apparatus for processing a substrate comprising a transfer chamber and a plurality of process chambers connected to the transfer chamber. The pumps for evacuating the process chambers are arranged in a manner that inherently meets the presently recited alternating relationship adjacent to the transfer chamber and within a perimeter of the apparatus.

Claims 9, 27 and 29 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Olson (5,709,753). Olson (see Figs. 3 and 6 and col. 9, lines 21-45 and col. 10, lines 21-23) discloses an apparatus for containing a substrate including a process chamber that is evacuated by a vacuum pump that exhausts to atmospheric pressure. It is inherently located within the envelope of the apparatus.

Claims 9, 27 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ackley (4,534,314) taken in view of O'Hanlon. Ackley (Figs. 1 and 8-12, col. 1, lines 58-61, and col. 3, lines 15-18) discloses an apparatus for containing and/or processing a substrate including a roughing pump connected to a vacuum chamber to pump the vacuum chamber down from atmospheric pressure, and arranged to operate within the envelope of the apparatus. O'Hanlon teaches (page 364, lines 21-25) that roughing pumping hardware is designed to exhaust to atmospheric pressure and can consist of a single pump or a two pumps in series. It would have been obvious to one skilled in the art to use a roughing pump arrangement that exhausts to atmospheric

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pressure for a loadlock pump arrangement of the type taught by Ackley in view of O'Hanlon's teaching that rough pumping hardware is intended to pump to atmospheric pressure.

Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ackley (4,534,314) taken in view of O'Hanlon as stated above, taken in view of Kawamura (6,251,192) and Beyer (5,944,049). Kawamura teaches the use of a multiple inlet pump to operate a loadlock chamber and a process chamber, to increase the efficiency of the vacuum system. It would have been prima facie obvious to use a pump of the type taught by Kawamura as a substitute for the pumps used in the multi-chamber apparatus of Ackley to increase pump efficiency. Beyer (Fig. 14 and col. 11, lines 18-36) is cited for his teaching that it is known in the art that a multiple inlet pump can pump to atmospheric pressure, and it would have been obvious to provide that feature for Kawamura's pump in view of Beyer.

✓ Claims 10, 11 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicants' description of the prior art taken in view of Huntley (6,397,883) and Hung (5,718,029). Applicants' Fig. 1 (see also pages 2-4 of the specification) illustrates an apparatus for processing a substrate including at least two pumps, a process chamber, a load lock chamber and a transfer chamber. While Fig. 1 schematically illustrates the pumps located below the vacuum chambers, applicants describe (page 2, lines 23-25) the pump location as being in a "garage" in a remote location in the fabrication facility. Huntley (Fig. 1 and col. 1, lines 17-21 and 44-53) and Hung (Figs. 1-3 and col. 3, lines 23-30) each discloses a semiconductor fabrication facility in which a

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roughing pump arrangement is intentionally located directly below the vacuum processing apparatus that the pump is connected to, and therefore the pump arrangement is located in the envelope of the apparatus. Hung (col. 1, lines 25-27 and col. 3, lines 15-17) also teaches the use of a waffled concrete ceiling 14 for his pump enclosure that meets the limitations of claim 18. It would have been obvious to one skilled in the art to provide the pumps of Fig. 1 of applicants' specification directly below the processing apparatus that they service, in view of Huntley and Hung. It is noted that applicants indicate at page 3, lines 19-22 of their specification that they intend an "envelope" of space to be typically a rectangle defined by the components of the apparatus, and similar to a footprint. Since a rectangle is two dimensional, the envelope of space includes the space above and below the rectangle. It is noted that Huntley describes his clean room processing apparatus as being within the footprint of his service section (including vacuum pumps), which is on a level below the clean room.

✓ Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over applicants' description of the prior art taken in view of Huntley and Hung for the reasons stated above, taken in further view of Hauff (5,769,626) or Kuribayashi (6,410,455), who both teach a step of providing a pump with wheels so the pump can be more easily moved. It would have been obvious to use wheeled pumps in the facilities of Huntley or Hung so the pump can be more easily moved, in view of the teaching of Hauff or Kuribayashi.

✓ Claims 12, 13, 15, 16, 20 and ~~25-26~~ are rejected under 35 U.S.C. 103(a) as being unpatentable over applicants' description of the prior art taken in view of Huntley

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(6,397,883) and Hung (5,718,029) for the reasons stated above, taken in further view of van Os (5,792,272), who teaches the use of a cluster tool having four process chambers and two load lock chambers. It would have been obvious to use the apparatus of van Oz in the clean room facilities of Huntley or Hung, and to provide the primary pumps below the chambers as taught by Huntley and Hung.

Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over applicants' description of the prior art taken in view of Huntley (6,397,883) and Hung (5,718,029), and taken in further view of Beyer (5,944,049), who discloses a pump with an inlet connected to a vacuum chamber and an outlet exhausting to atmospheric. It would have been obvious to use the pump disclosed by Buyer in the prior art processing apparatus shown in applicants' fig. 1, with the pump located within the envelope of the apparatus as taught by Huntley and Hung.

Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over applicants' description of the prior art taken in view of Huntley (6,397,883) and Hung (5,718,029), and taken in further view of Kawamura (6,251,192) and Beyer (5,944,049). Kawamura teaches the use of a multiple inlet pump to operate a loadlock chamber and a process chamber, to increase the efficiency of the vacuum system. It would have been prima facie obvious to use a pump of the type taught by Kawamura as a substitute for the pumps used in the multi-chamber apparatus of applicants' Fig. 1 to increase pump efficiency. Beyer (Fig. 14 and col. 11, lines 18-36) is cited for his teaching that it is known in the art that a multiple inlet pump can pump to atmospheric pressure, and it would have been obvious to provide that feature for Kawamura's pump in view of Beyer.

Claim 27 is rejected under 35 U.S.C. 102(a) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Beyer, who discloses a pump with an inlet connected to a vacuum chamber and an outlet exhausting to atmospheric. The phrase "constructed and arranged to operate within an envelope of the apparatus" is a recitation of intended use that Beyer's pump would be capable of.

Claims 9, 27, 29 and 39 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over the information submitted by applicants in the IDS filed July 25, 2002, in the CIP parent application, which describes a vacuum pump and its position within a semiconductor processing tool that was sold more than one year prior to the filing date of the present application.

Claims 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over the information submitted by applicants in the IDS filed July 25, 2002, in the CIP parent application, which describes a vacuum pump and its position within a semiconductor processing tool that was sold more than one year prior to the filing date of the present application, as stated in the previous paragraph, taken in further view of Imahashi (5,695,564) and Saito (5,314,541). The on sale information provided by applicants shows the use of the on sale pump connected to a loadlock chamber, but does not show plural pumps connected to plural loadlock chambers. Imahashi (Figs. 1, 2 and 8-12) and Saito (Fig. 2) disclose semiconductor processing apparatus having plural loadlock chambers, with Saito in particular showing separate pumps connected to separate loadlock chambers. It would have been obvious to plural pumps of the type disclosed in the on sale information to plural loadlock chambers, because Imahashi and

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Saito teach that installations with plural loadlock chambers are commonly known in the prior art, and Saito teaches that it was known to provide separate pumps for the plural loadlock chambers.

Claims 14 and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Bueker whose telephone number is (703) 308-1895. The examiner can normally be reached on 9 AM - 5:30 PM, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on (703) 308-1633. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



Richard Bueker
Primary Examiner
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March 24, 2003